

Modern Concepts of Cardiovascular Disease

Published monthly by the AMERICAN HEART ASSOCIATION
450 SEVENTH AVENUE, NEW YORK, N. Y.

DR. SAMUEL A. LEVINE, Boston, *Editor*
DR. MARSHALL N. FULTON, Providence, *Associate Editor*

Vol. I

February, 1932

No. 2

TREATMENT OF HEART FAILURE APART FROM THE USE OF DIGITALIS

Let us consider the various aspects of the treatment of congestive heart failure apart from the administration of digitalis. Inasmuch as there is very little difference in the treatment whether the heart failure occurs in a patient with valvular or non-valvular heart disease, it will merely be assumed that we are dealing with the problem of dyspnea and evidences of more or less peripheral congestion, like oedema of the extremities, engorgement of the liver, congestion of the lungs and the like. It is not intended to consider here such special problems as angina pectoris, syphilitic heart disease, or thyroid heart disease, but rather to review the therapeutic procedures available in the treatment of myocardial insufficiency, no matter what the etiological factors involved may be. It must not be inferred that the proper etiological diagnosis can be neglected, for recovery may depend on just this discovery. A thyrocardiac or a case of syphilitic aortic insufficiency may require a course of treatment such as we plan to discuss, but in addition the one may also need a sub-total thyroidectomy and the other a course of anti-luetic treatment.

How strict or how prolonged and thorough a course of treatment should be instituted will in a large measure depend on the severity of the state of decompensation. Whereas a few weeks may be advisable in one case, months may be required in another. Let us picture a case with extreme congestive heart failure. The patient is a man 55 years old, with an enlarged heart and hypertension, systolic 220 and diastolic 105. He has had increasing dyspnea and swelling of the legs and latterly cannot sleep except in the upright position, and has particular difficulty in breathing at night. Examination showed a regular heart with a rate of 110, a loud systolic apical murmur, marked oedema of the lower limbs, ascites, enlarged tender liver, and rales at both bases of the lungs, and evidence of free fluid in the right chest. Let us also assume that the administration of digitalis is being properly carried out.

Of primary importance is mental and physical rest. Whether this can best be accomplished in the patient's house or in a hospital, with or without nurses, will depend on many individual factors and the family physician familiar with all these details, financial, domestic, social and psychological, can best decide this. The patient should be kept in bed. By this is meant that he remains in bed 24 hours of the day. The only occasion for leaving the bed will be for bowel movements. At times even this privilege will have to be denied him, although we must not forget that many patients expend more mental and physical energy trying to use a bed-pan than would be expended in going to the bathroom. He should use a bottle for urination. Such a patient may insist that he cannot stay in bed—that he must sit in a chair. Although rarely an arm-chair may prove to be the best solution, it generally is possible to make the patient comfortable in bed. It is important to arrange the bed with pillows, a back rest, a prop at the feet, and other simple devices so that the body is supported in various ways and the correct position once obtained is not altered. These apparently obvious details are often overlooked and yet may make the difference between enabling the patient to rest and sleep in peace and thrash around restlessly.

Besides having a comfortable bed it will be necessary to assure the patient a good night's rest. Generally this is not possible without medication. If a heart patient spends a sleepless or agitated night, he will be so much the worse for it the next day. It is therefore wise to use some sedative, and the mildest one that is effective, is the one to be employed. Sometimes a dose of bromide, luminal, or chloral hydrate will prove satisfactory, but when there is nocturnal dyspnea as in the case described above, morphia will be necessary. Generally, during the first few nights a subcutaneous dose of 0.010 to 0.015 ($\frac{1}{10}$ to $\frac{1}{8}$ grains) of morphia sulphate should be given. The dose is then gradually diminished, then changed to a similar pill by

mouth, and finally to some milder sedative. Do not hesitate to give morphine hypodermically to patients with advanced cardiac failure. Often little else will be necessary to start the recovery of circulatory compensation. With this program the patient will find that he can rest in bed and that his breathing will improve.

Apart from the rest in bed and proper sleep we have the matter of diet to consider. A time honored method that has considerable merit is to start with a few days of Karrel diet. This consists of one glass of milk 4 times a day and no other food or drink. Cracked ice may be given for thirst. This simple diet is low in protein, calories, salt and fluid and often initiates a salutary diuresis, with the aid of the digitalis that the patient is taking in the meantime. After about three days a soft solid diet may be given without meat, fish, eggs or added salt, and with fluids limited to 1000 cc-1200 cc. Sometime later, the more ordinary house diet may be given, limiting the protein only slightly, depending on whether there is any appreciable added element of nephritis. Fluids and salt should be restricted indefinitely. In general, it is thought that a high carbohydrate diet is desirable in heart failure. If the patient is overweight, not only should there be a loss of weight due to loss of fluid, but the actual basic weight should be reduced by proper dietary directions.

It used to be taught that purgation was desirable in cases of heart failure with congestion. There is very little clinical evidence in favor of this view and most authorities at present believe that if the patient has a daily bowel movement, it is sufficient.

The use of diuretics has come to occupy an important place in the treatment of heart failure. Often rest in bed, digitalis, Karrel diet, and a few days of morphia will suffice to render the patient free of oedema. If, however, after the first week of this treatment the peripheral oedema persists and gives evidence of not disappearing, diuretics may prove very beneficial. They are generally best given after complete digitalization. Furthermore, diuretics may be ineffective while there is considerable ascites and yet produce a marked diuresis directly after the abdomen is tapped, as if the pressure of the abdominal fluid on the renal vessels prevented the diuretic from working. Diuretics will be most valuable where the oedema is purely cardiac or circulatory and are contraindicated in renal oedema. The diuretics most generally used at present can be divided into two groups, the compounds of theobromine, and those of mercury. Some of the former are theocin, diuretin, theocalcin and metaphyllin. Of the latter, the main one is salyrgan. Theocin is often very effective in the dose of 0.3 (grains V) three times a day, to be given one day a week. Diuretin can likewise be given in doses of 1.0 to 2.0 (grains

XV to XXX) three times a day, once a week. Both of these drugs may be given in much smaller daily doses, although it has seemed better to concentrate the dosage on one day and then allow a rest period. They both may produce very disagreeable nausea and vomiting, and often cannot be tolerated. Salyrgan is much more effective but must be given hypodermically. It is best given in 1 to 2 cc. doses intravenously. Great precaution must be exercised in the injection because if even a very small amount of the drug leaks outside the vein, painful and protracted inflammation or slough will result. If there is any doubt about the facility of performing a most satisfactory injection of the vein, the needle should be withdrawn entirely. It can also be given intramuscularly, but the solution must be injected deep into the gluteal region and not in the subcutaneous tissue; otherwise a disagreeable painful slough will develop. These injections can be repeated every 4 to 7 days if necessary. Sometimes giving 1.3 grams (20 grains) of ammonium chloride, 4 times a day for several days before giving the salyrgan enhances the diuretic effect. The effect from all these diuretics is obtained in 24 hours, if it is to occur at all. It must be remembered that patients with heart failure may still have considerable hidden oedema, even after evidence of peripheral pitting of the subcutaneous tissue has disappeared.

There are other mechanical therapeutic measures available in congestive heart failure. Do not overlook a distended bladder especially in elderly males who may have some prostatic obstruction. This oversight occasionally prevents the diuresis from occurring. If there is an appreciable hydrothorax, especially frequent in the right pleural cavity, a thoracentesis should be performed. If it is thought that the amount present is less than 500 cc., it might just as well be left alone. Similarly if it is thought that more than 2000 cc. will be obtained on tapping the abdomen, this should be performed. Occasionally phlebotomy is valuable. The criteria for bleeding are not well standardized, but in general it may be said that if the liver is congested and the veins of the neck are distended and there is no anaemia, quickly removing about 400-500 cc. of blood may be helpful. On rare occasions this procedure may be life saving. Other procedures of more recent origin, and therefore of less certain value, such as oxygen therapy and bandaging the extremities, need not be discussed. Generally a patient of the type described at the beginning of this discussion will start feeling much better in several days and be practically free of oedema in 10 to 14 days. He should, however, be kept in bed for at least four weeks in all before gradually allowing him out and increasing his activities.

S. A. LEVINE, M. D.

k.
er
n-
a
e-
be
ut
in
on
en
ne
gh
ty
ne
It
on
ad
s-
n-
s-
of
ys
ic
b-
st
re
en
u-

a-
ot
ly
n.
is
o-
al
it
an
ni-
ill
ld
le.
d-
er
ed
ut
re
er
of
d-
n-
n-
ch
of
be
re
nis